<u>RESUME</u>

<u>Name</u>: **Wojciech K. Kasprzak**

<u>Citizenship</u>: United States

<u>Education</u>:

1989	B.S. (Electrical Engineering), University of Maryland at College Park, College Park, MD
1994	M.S. (Computer Science), Johns Hopkins University, Baltimore, MD

<u>Brief Chronology of Employment</u>:

1990-1992	Laboratory Assistant, Biomedical Supercomputing Center, Program Resources Inc., Frederick, MD
1992-1996	Research Associate, DynCorp/Program Resources Inc., Frederick, MD
1996-1997	Jr. Scientific Applications Analyst, Frederick Biomedical Supercomputing Center, SAIC, Frederick, MD
1997-2003	Programmer Analyst, Basic Science Program, SAIC-Frederick, Inc., CCR Nanobiology Program, NCI, Frederick, MD
2003-2013	Programmer Analyst IV, Basic Science Program, SAIC-Frederick, Inc., Computational RNA Structure Section, Nanobiology Program, CCR Nanobiology Program, Frederick National Laboratory for Cancer Research, Frederick, MD
2013-present	Bioinformatics Analyst IV, Basic Science Program, Leidos Biomedical Research, Inc., in support of RNA Structure and Design Section, Gene Regulation and Chromosome Biology Laboratory (since 2015), Frederick National Laboratory for Cancer Research, Frederick, MD

<u>Honors and Other Special Scientific Recognition</u>:

- SAIC's Science Achievement Award, December, 2000
- Basic Research Program Retreat First Place Poster, 2003
- Poster Award, Spring Research Festival, NCI-Frederick, 2005
- Publication Award, STFC Publication Competition for the category of Information & Communications Technology (SAIC-wide competition), 2007
- Poster Award, Spring Research Festival, NCI-Frederick, 2007
- Poster Awards (2), Spring Research Festival, NCI-Frederick, 2008
- SAIC's Distinguished Career Service Award, December 2010
- Poster Award, Spring Research Festival, NCI-Frederick, 2012
- Poster Award, Spring Research Festival, NCI-Frederick, 2014

Skills:

- Scientific Software: Amber and NAMD Molecular Dynamics packages, ANM coarse-grain elastic network modeling, RNA2D3D, UCSF Chimera, PyMOL, Accelrys Discovery Studio, RasMol and Midas - 3D RNA modeling and visualization software, NanoTiler – RNA nanostructure modelling software, Genetic Algorithm for RNA secondary structure prediction MPGAfold, MFOLD/RNAstructure/Vienna Package - as well as other RNA/DNA secondary structure prediction packages, GCG package, Sequence alignment tools, RNAmot/RNA Motif sequence and structure alignment.
- Databases: SQL (MySQL, Sybase, dBASEIV), AllegroStore - an Object-Oriented Database System
- Programming Languages: Lisp, Python (Python-PyMOL), C++, C, Fortran, Pascal, Basic, Unix shell scripts and tools, HTML, Java
- Operating Systems: Linux/Unix, MS Windows, Apple OS
- Platforms: PC/Linux (Ubuntu and Red Hat), SGI, SUN, Linux clusters MIMD platforms

Research Interests:

- RNA-based computational nanostructure design and characterization
- Three-dimensional modeling and molecular dynamics analysis
- Structure prediction analysis software development
- Multi-conformational secondary structure systems
- RNA secondary structure prediction and structure-function connection

Patents:

Co-inventor on two US patents:
1. Shapiro BA, Yingling Y, Bindewald E, Kasprzak W, Jaeger L, Severcan I, Geary C, Afonin KA. RNA Nanoparticles and Methods of Use. US Patent No. 2010148085.

2. Shapiro BA, Yingling Y, Bindewald E, Kasprzak W, Jaeger L, Severcan I, Geary C, Afonin KA. RNA Nanoparticles and Nanotubes. US Patent No. 20120263648.

Presentations:

1. Shapiro BA and Kasprzak W: STRUCTURELAB: A heterogeneous computer system for the analysis of RNA structures. Association of Lisp Users Meeting and Workshop, Cambridge, MA, 1995.

2. Kasprzak W: Secondary structure folding dynamics of HDV type III strains. CCR Nanobiology Program Seminar Series, NCI-Frederick, April 11, 2007.

3. Kasprzak W: Characterization of building blocks for RNA-based nano designs. CCR Nanobiology Program Seminar Series, NCI-Frederick, April 9, 2008.

4. Kasprzak W, Yingling YG, Simon AE, and Shapiro BA: Computational and Experimental Determination of the tRNA-like Structure in the 3'UTR of the Turnip Crikle Virus (TCV). 53rd Annual Biophysical Society Meeting, Boston, MA, March 1, 2009.

5. Kasprzak W: Computational and experimental determination of tRNA-shaped structure within the 3'UTR of the Turnip Crinkle Virus (TCV). CCR Nanobiology Program Seminar Series, NCI-Frederick, June 24, 2009.

6. Kasprzak W, Bindewald E, Kim T, Stephen AG, Fisher RJ, and Shapiro BA: Evaluation of selected kissing-loops as building blocks in RNA nano design. 54th Annual Biophysical Society Meeting, San Francisco, CA, February 24, 2010.

7. Kasprzak W, Bindewald E, Kim T, and Shapiro BA: RNA Structure Flexibility in Nanostructure Modeling. 19th Annual GFTS Symposium: RNA in Motion, Ames, IA, September 9, 2010.

8. Kasprzak W: Incorporating RNA structure flexibility data into nanostructure modeling. CCR Nanobiology Program Seminar Series, NCI-Frederick, November 17, 2010.

9. Kasprzak W, Diehl AR, Bindewald E, Kim T, Zimmermann MT, Jernigan RL, and Shapiro BA: Computational Approaches to Design and Modeling of Flexible RNA-based Nanostructures. Protein and RNA Structure Prediction Conference 2011, Xcaret, Mexico, December 3, 2011.

10.   Kasprzak W: Influence of RNA Dynamics on Structure Assembly. <u>RNA interest Group Meeting</u>, Frederick, MD, Feb. 22, 2012

11.   Kasprzak W: Software packages available for downloads from our CCRNP Web Site; StructureLab and RNA2D3D. <u>FNLCR Scientific Library Resource Fair</u>, Frederick, MD, March 7, 2012.

12.   Kasprzak W: The influence of RNA dynamics on nanostructure assembly. <u>CCR Nanobiology Program Seminar Series</u>, NCI-Frederick, March 14, 2012.

13.   Kasprzak W, Afonin KA, Bindewald E, Puppala PS, Kim T, Zimmermann MT, Jernigan RL, and Shapiro BA: Coarse-grained Computational Characterization of RNA Nanocube Flexibility Correlates with Experiments. <u>57th Annual Biophysical Society Meeting</u>, Philadelphia, PA, February 3, 2013.

14.   Kasprzak W, Simon AE, and Shapiro BA: Modeling-Informed Determination of RNA Structures and Their Function in the 3´ UTRs of Plant Viruses. Short presentation at the <u>NCI-Frederick Spring Research Festival</u>, Frederick, MD, May 7, 2014.

15.   Kasprzak WK, Dinman JD, and Shapiro BA: Ribosomal Frameshifting in the CCR5 mRNA: Structure, miRNAs & NMD. <u>Staff Scientist/Staff Clinician Seminar Series</u>, Frederick, MD, January 22, 2015.

16.   Kasprzak WK, Dinman JD, and Shapiro BA: A Ribosomal Frameshif Structure in the CCR5 mRNA Leads to miRNA-stimulated Nonsense-mediated mRNA Decay. Short presentation at the <u>NCI-Frederick Spring Research Festival</u>, Frederick, MD, May 6, 2015.

17.   Kasprzak WK, Dinman JD, and Shapiro BA: Ribosomal Frameshifting in the CCR5 mRNA. <u>GRCBL Seminar Series</u>, Frederick, MD, July 16, 2015.

<u>Poster Presentations</u>:

1.   Kasprzak W and Shapiro BA: Stem Trace: An interactive visual tool for comparative RNA structure analysis. Poster Presentation at the <u>Bioinformatics Meeting</u>, San Diego, CA, September 1997.

2.   Live Demo Presentation of StructureLab tools available at the time in conjunction with presentation given by Dr. Bruce A. Shapiro at the <u>Third Annual Meeting of the RNA Society</u>, Madison, WI, May 1998.

3.   Contribution of Poster Presentation, <u>NCI-Frederick Spring Research Festival</u>, 1999.

4.   Kasprzak W and Shapiro BA: Stem Trace: A GUI-based tool for an exploratory RNA structure analysis. Poster Presentation at the <u>Novel Approaches in RNA Informatics (NARI) Meeting</u>, Montreal, Quebec, Canada, May 18-19, 2000.

5.   Kasprzak W, Atha DH, O'Connell CD, and Shapiro BA: Computer prediction of single-stranded DNA secondary structures constrained by capillary electrophoresis results. Poster Presentation at the <u>Bioinformatics, Biostatistics, and Computational Biology Faculty Meeting</u>, Gaithersburg, MD, November 6, 2002.

6.   Kasprzak W and Shapiro BA: Alternate conformations of the HIV-1 dimer initiation site explored by the massively parallel genetic algorithm and the StructureLab computer workbench. Poster Presentation at <u>SAIC's Basic Research Program (BRP) Retreat</u>, St. Michaels, MD, May 11-13, 2003.

7.   Contributor to the presentation by Dr. Bruce A. Shapiro at the <u>Interface 2004 Conference</u>, Baltimore, MD, May 26-29, 2004.

8.   Kasprzak W and Shapiro BA: Comparison of the folding pathways of multiple strains of the HIV-1 leader region predicted by the massively parallel genetic algorithm and visual data mining tools. Poster Presentation at <u>SAIC's Basic Research Program (BRP) Retreat</u>, Annapolis, MD, September 7-8, 2004.

9.   Kasprzak W, Bindewald E, and Shapiro BA: Computational exploration of the structural polymorphism of the HIV-1 leader region. Poster Presentation at the <u>NCI-Frederick Spring Research Festival</u>, 2005.

10.   Kasprzak W, Bindewald E, and Shapiro BA: Folding pathways of multiple strains of the HIV-1 leader regions explored with the massively parallel genetic algorithm MPGAfold. Poster Presentation at the <u>NIH Research Festival</u>, Bethesda, MD, 2005.

11.   Kasprzak W, Linnstaedt SD, Casey JL, and Shapiro BA: Computational modeling of the HDV III secondary structure folding dynamics. Poster Presentation at the 51st <u>Biophysical Society Meeting</u>, Baltimore, MD, March 2007.

12.   Yingling YG, Kasprzak W, and Shapiro BA: Formation of nanoparticle building blocks. Poster Presentation at the <u>CCR Nanobiology Program Think Tank</u>, Frederick, MD, May 2007.

13.   Kasprzak W, Linnstaedt SD, Casey JL, and Shapiro BA: Determination of hepatitis delta virus type III functional conformations. Poster Presentation at the <u>NCI-Frederick Spring Research Festival</u>, May 2007.

14.   Kasprzak W, Linnstaedt SD, Casey JL, and Shapiro BA: Comparison of the secondary structure folding dynamics of two HDV III strains. Poster Presentation at the <u>NIH Research Festival</u>, Bethesda, MD, September 2007.

15. Kasprzak W, Linnstaedt SD, Casey JL, and Shapiro BA: Determining functional conformations of two HDV III strains; Bindewald E, Kasprzak W, O'Connor M, Boyle B, and Shapiro BA: Utilizing the RNAJunction Database for the design of RNA nanostructures. Poster Presentations at the <u>University of Minnesota's IMA Workshop: RNA in Biology, Bioengineering and Nanotechnology</u>, Minneapolis, MN, October 2007.

16. Kasprzak W, Bindewald E, and Shapiro BA: Characterization of structural elements for RNA nano design; Bindewald E, O'Connor M, Kasprzak W, and Shapiro BA: Systematic design of RNA nanostructures. Poster Presentations at the <u>52nd Annual Biophysical Society Meeting</u>, Long Beach, CA, February 2008.

17. Kasprzak W, Bindewald E, and Shapiro BA: Characterization of building blocks for RNA nanostructure design; Bindewald E, Boyle B, O'Connor M, Kasprzak W, and Shapiro BA: A computational pipeline for the automated design of RNA nanostructures. Poster Presentations at the <u>CCR Nanobiology Program Think Tank</u>, Frederick, MD, May 13, 2008.

18. Kasprzak W, Bindewald E, and Shapiro BA: Characterization of building blocks for RNA nanostructure design; Bindewald E, Boyle B, O'Connor M, Kasprzak W, and Shapiro BA: A computational pipeline for the automated design of RNA nanostructures. Poster Presentations at the <u>NCI-Frederick Spring Research Festival</u>, May 14-15, 2008.

19. Kasprzak W, Yingling YG, Wang Y-X, Simon AE, and Shapiro BA: Novel tRNA-shaped Translational Enhancer in the 3' UTR of the Turnip Crinkle Virus; Bindewald E, Kasprzak W, and Shapiro BA: Computational Strategies for Designing Biomolecular Nanoparticles. Poster Presentations at the <u>NCI-Frederick Spring Research Festival</u>, April 29-30, 2009.

20. Kasprzak W, Bindewald E, Kim T, and Shapiro BA: Dynamic Properties of RNA Nanostructure Building Blocks; Bindewald E, Kasprzak W, and Shapiro BA: Computational Strategies for Designing Biomolecular Nanoparticles. Poster Presentations at the <u>CCR Nanobiology Program Think Tank</u>, Frederick, MD, May 12, 2009.

21. Kasprzak W, Yingling YG, Simon AE, and Shapiro BA: The Structure of a Novel tRNA-shaped Translational Enhancer Internal to the 3' UTR of the Turnip Crinkle Virus. Poster Presentation at <u>RNA Society Meeting</u>, Madison, WI, May 26-30, 2009.

22. Kasprzak W, Bindewald E, Kim T, and Shapiro BA: Exploration of Structural Building Block Properties for RNA Nanostructures. Poster Presentation at the <u>Albany 2009: 16th Conversation</u>, Albany, NY, June 16-20, 2009.

23. Bindu, LK, Stephen AG, Kasprzak W, Shapiro BA, and Fisher RJ: Characterization of RNA-RNA interactions by Surface Plasmon Resonance Spectroscopy. Poster Presentations at the <u>NCI-Frederick Spring Research Festival</u>, Frederick, MD, May, 2010.

24. Kasprzak W, Bindewald E, Kim T, Jaeger L, and Shapiro BA: Incorporating RNA Structure Flexibility Data into Nanostructure Modeling. Poster Presentation at the Nanobiology Think Tank 2010, Frederick, MD, May 13, 2010.

25. Kasprzak W, Bindewald E, Kim T, Jaeger L, and Shapiro BA: Integrating RNA Flexibility Data into Nanostructure Modeling. Poster Presentation at the 2010 International Conference on RNA Nanotechnology and Therapeutics, Cleveland, OH, October 23-25, 2010.

26. Kasprzak W, Bindewald E, Kim T, Zimmermann MT, Jernigan RL, and Shapiro BA: Design and Modeling of RNA Nanostructures with Flexible Building Blocks. Poster Presentation at the 55th Annual Biophysical Society Meeting, Baltimore, MD, March 5-9, 2011.

27. Kasprzak W, Afonin KA, Bindewald E, Puppala PS, Hall KT, Kim T, Zimmermann MT, Jernigan RL, and Shapiro BA: The influence of RNA Dynamics on Nanostructure Assembly; Puppala PS, Kasprzak W, Bindewald E, Afonin KA, and Shapiro BA: Application of an Anisotropic Model to the Characterization of RNA Nanostructures. Poster Presentations at the NCI-Frederick Spring Research Festival, May 9-10, 2012.

28. Koyfman AY, Afonin KA, Viard M, Kasprzak WK, Shapiro BA, and Chiu W: Cryo-EM studies of an engineered siRNA nano-ring used as a gene silencing Therapeutic. Poster Presentation at the 57th Annual Biophysical Society Meeting, Philadelphia, PA, February 3-6, 2013.

29. Kasprzak W, Afonin KA, Bindewald E, Puppala PS, Hall KT, Kim T, Zimmermann MT, Jernigan RL, and Shapiro BA: RNA Nanocube Characterization with Anisotropic Network Model Complements Experimental Data; Bindewald E, Afonin KA, Kasprzak W, Lindsay B, and Shapiro BA: Stochastic multistrand nucleotide secondary structure folding. Poster Presentations at the 2013 International Conference of RNA Nanotechnology and Therapeutics, Lexington, KY, April 3-5, 2013.

30. Hall KT, Kasprzak W, Afonin KA, Bindewald E, Kim T, and Shapiro BA: Novel Visualization and Analysis Tools to Elucidate RNA Nanostructure Dynamics. Poster Presentation at the NCI-Frederick Spring Research Festival, Frederick, MD, May 8-9, 2013.

31. Kasprzak W, Afonin KA, Bindewald E, Puppala PS, Hall KT, Kim T, Zimmermann MT, Jernigan RL, and Shapiro BA: RNA Nanocube Characterization with Anisotropic Network Model Complements Experimental Data. Poster Presentation at the NCI-Frederick Spring Research Festival, Frederick, MD, May 8-9, 2013.

32. Kasprzak W, Simon AE, and Shapiro BA: Modeling-Informed Determination of RNA Structures and Their Function in the 3´ UTRs of Plant Viruses. Poster Presented at the CCR RNA Biology Retreat at NCI-Shady Grove, January 27, 2014 and at the NCI-Frederick Spring Research Festival, Frederick, MD, May 7-8, 2014.

33.   Davey AK, Kasprzak W, and Shapiro BA: The Application of Computational Coarse-Grained Methods for Assessing RNA Dynamics. Poster Presented at the <u>NCI-Frederick Spring Research Festival</u>, Frederick, MD, May 7-8, 2014.

34.   Kasprzak W, Simon AE, and Shapiro BA: A Novel Interaction Between the 5´ and 3´ ends of the Pea Enation Mosaic Virus (PEMV) Enhances Translation. Poster Presentation at the <u>2014 RNA 2014; The Nineteenth Annual Meeting of the RNA Society</u>, Quebec City, Quebec, Canada, June 3-8, 2014

35.   Kasprzak WK, Afonin KA, Gupta K, Kim T, Viard M, Puri A, and Shapiro BA: Computational Characterization of Novel Bolaamphiphiles as Carriers for RNA Nanostructure Delivery. Poster Presentation at the <u>RNA Nanotechnology Gordon Research Conference</u>, Ventura, CA, Feb. 1-6, 2015.

36.   Kasprzak WK, Dinman JD, and Shapiro BA: A Ribosomal Frameshifting Structure in the CCR5 mRNA Leads to miRNA-Stimulated Nonsense-Mediated mRNA Decay. Poster Presentation at the <u>59th Annual Biophysical Society Meeting</u>, Baltimore, MD, Feb. 7-11, 2015.

37.   Kasprzak WK, Dinman JD, and Shapiro BA: A Ribosomal Frameshif Structure in the CCR5 mRNA Leads to miRNA-stimulated Nonsense-mediated mRNA Decay. Poster . Poster (#SBC6) Presented at the <u>NCI-Frederick Spring Research Festival</u>, Frederick, MD, May 4-7, 2015.

BIBLIOGRAPHY

Published:

1.   Shapiro BA, Chen J, Busse T, Navetta J, Kasprzak W, and Maizel JV: Optimization and performance analysis of a massively parallel dynamic programming algorithm for RNA secondary structure prediction. The International Journal of Supercomputer Applications 9(1): 29-39, 1995.

2.   Shapiro BA and Kasprzak W: STRUCTURELAB: A heterogeneous bioinformatics system for RNA structure analysis. J. Mol. Graphics 14: 194-205, 1996.

3.   Kasprzak W and Shapiro BA: Stem Trace: An interactive visual tool for comparative RNA structure analysis. Bioinformatics 15(1): 16-31, 1999.

4.   Shapiro BA, Bengali D, Kasprzak W, and Wu JC: Computational insights into RNA folding pathways: Getting from here to there. Proceedings of the Atlantic Symposium on Computational Biology, Genome Information Systems and Technology, March 15-17, 2001, pp. 10-13.

5.   Shapiro BA, Bengali D, Kasprzak W, and Wu JC: RNA folding pathway function intermediates: Their prediction and analysis. J. Mol. Biol. 312(1): 27-44, 2001.

6.   Atha DH, Kasprzak W, and Shapiro BA: Prediction of DNA single strand. Conformational polymorphism (SSCP): Analysis by capillary electrophoresis and computerized DNA modeling. Nucleic Acids Res. 29(22): 4643-4653, 2001.

7.   Kasprzak W and Shapiro BA: Structural dependencies of the HIV-1 dimer initiation site as determined by the massively parallel genetic algorithm. Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences. CSREA Press, 2002, pp. 48-54.

8.   Shapiro BA and Kasprzak W: Visual data mining of RNA secondary structure and folding pathways as determined by the massively parallel genetic algorithm. Proceedings of the 36th Symposium on the Interface 2004: Computational Biology and Bioinformatics, Baltimore, MD, May 2004.

9.   Kasprzak W, Bindewald E, and Shapiro BA: Structural polymorphism of the HIV-1 leader region explored by computational methods. Nucleic Acids Res. 33(22): 7151-7163, 2005.

10.   Gee A H, Kasprzak W, and Shapiro BA: Structural differentiation of the HIV-1 poly(A) signal. J. Biomol. Stuct. Dyn. 23(4): 417-428, 2005.

11. Linnstaedt SD, Kasprzak W K., Shapiro BA, and Casey JL: The role of RNA secondary structure heterogeneity in hepatitis delta virus genotype III RNA editing. RNA 12(8): 1521-1533, 2006.

12. Seko Y, Cole S, Kasprzak W, Shapiro BA, and Ragheb JA: The role of cytokine mRNA stability in the pathogenesis of autoimmune disease. Autoimmunity Rev. 5(5): 299-305, 2006.

13. Shapiro BA, Kasprzak W, Grunewald C, and Aman J: Graphical exploratory data analysis of RNA secondary structure dynamics predicted by the massively parallel genetic algorithm. J. Mol. Graph. Model. 25(4): 514-531, 2006.

14. Shapiro BA, Yingling YG, Kasprzak W, and Bindewald E: Bridging the gap in RNA structure prediction. Curr. Opin. Struct. Biol. 17(2): 157-165, 2007.

15. Bindewald E, Hayes R, Yingling YG, Kasprzak W, and Shapiro BA: RNA Junction: A database of RNA junctions and kissing loops for three-dimensional structural analysis and nanodesign. Nucleic Acids Res. 36 (Database Issue): D392-D397, 2008.

16. McCormack JC, Yuan X, Yingling YG, Kasprzak W, Zamora RE, Shapiro BA, and Simon AE: Structural domains within the 3' UTR of Turnip Crinkle Virus. J. Virol. 82(17): 8706-8720, 2008.

17. Linnstaedt SD, Kasprzak WK, Shapiro BA, and Casey JL: The fraction of RNA that folds into the correct branched secondary structure determines hepatitis delta virus RNA editing levels. RNA 15(6): 1177-1187, 2009.

18. Shiao Y-H, Lupascu ST, Gu YD, Kasprzak W, Hwang CJ, Fields JR, Leighty RM, Quifiones O, Shapiro BA, Alvord WG, and Anderson LM: An intergenic non-coding rRNA correlated with expression of the rRNA and frequency of an rRNA single nucleotide polymorphism in lung cancer cells. PLoS One 4(10): e7505 1-11, 2009.

19. Zuo X, Wang J, Yu P, Eyler D, Xu H, Starich MR, Tiede DM, Simon AE, Kasprzak W, Schwieters CD, Shapiro BA, and Wang Y-X: Solution structure of the cap-independent translational enhancer and ribosome binding element in the 3' UTR of Turnip Crinkle virus. Proc. Natl. Acad. Sci U.S.A. 107(4): 1385-1390, 2010.

20. Kasprzak W, Bindewald E, Kim T, Jaeger L, and Shapiro BA: Use of RNA structure flexibility data in nanostructure modeling. Methods 54(2): 239-250, 2011.

21. Manzano M, Reichert ED, Polo S, Falgout B, Kasprzak W, Shapiro BA, and Padmanabhan R: Identification of CIS-acting elements in the 3'-untranslated region of the dengue virus type 2 RNA that modulate translation and replication. J. Biol. Chem. 286(25): 22521-22534, 2011.

22.   Gao F, Kasprzak W, Stupina V, Shapiro BA, and Simon AE: A ribosome-binding, 3' translational enhancer has a T-shaped structure and engages in a long distance RNA: RNA interaction. J. Virol. 86(18): 9828-9842, 2012.

23.   Gao F, Gulay SP, Kasprzak W, Dinman JD, Shapiro BA, and Simon AE: The kl-TSS translational enhancer of PEMV can bind simultaneously to ribosomes and a 5' proximal hairpin. J. Virol. 87(22)11987-12002, 2013.

24.   Afonin KA, Desai R, Viard M, Kireeva M, Bindewald E, Case CL, Maciag AE, Kasprzak WK, Kim T, Sappe A, Stepler M, KewalRamani VN, Kashlev M, Blumenthal R, and Shapiro BA: Co-transcriptional production of RNA-DNA hybrids for simultaneous release of multiple split functionalities. Nucleic Acids Res. 42(3):2085-2097, 2014.

25.   Tamim S, Vo DT, Uren PJ, Qiao M, Bindewald E, Kasprzak WK, Shapiro BA, Nakaya HI, Burns SC, Araujo PR, Nakano I, Radek AJ, Kuersten S, Smith AD, and Penalva LO: Genomic analyses reveal broad impact of miR-137 on genes associated with malignant transformation and neuronal differentiation in glioblastoma cells. PloS One 9(1):e85591, 2014.

26.   Afonin KA, Kasprzak W, Bindewald E, Puppala PS, Diehl AR, Hall KT, Kim T, Zimmermann MT, Jernigan RL, and Shapiro BA: Computational and Experimental Characterization of RNA Cubic Nanoscaffolds. Methods 67(2):256-266, 2014.

27.   Afonin KA, Kasprzak WK, Bindewald E, Kireeva M, Viard M, Kashlev M, and Shapiro BA: In Silico Design and Enzymatic Synthesis of Functional RNA Nanoparticles. Acc. Chem. Res. 47(6):1731-1741, 2014.

28.   Belew AT, Meskauskas A, Musalgaonkar S, Vivek AM, Sulima SO, Kasprzak WK, Shapiro BA, and Dinman JD: Ribosomal frameshifting in the CCR5 mRNA: regulation by miRNAs and NMD. Nature. 512(7514):265-269, 2014.

29.   Gao F, Kasprzak WK, Szarko C, Shapiro BA, and Simon AE: The 3' UTR of Pea enation mosaic virus contains two T-Shaped, ribosome-binding cap-independent translation enhancers. J. Virol. 88(20):11696-11712, 2014.

30.   Afonin KA, Viard M, Koyfman AY, Martins AN, Kasprzak WK, Panigaj M, Desai R, Santhanam A, Grabow WW, Jaeger L, Heldman E, Reiser J, Chiu W, Freed EO, Shapiro BA: Multifunctional RNA nanoparticles. Nano Lett. 14(10):5662-5671, 2014.

31.   Afonin KA, Viard M, Kagiampakis I, Case CL, Hofmann J, Vrzak A, Kireeva M, Kasprzak WK, Kewalramani VN, and Shapiro BA: Triggering RNA interference with RNA-RNA, RNA-DNA and DNA-RNA nanoparticles. ACS Nano. 9(1):251-259, 2015.

32.   Salton M, Kasprzak WK, Voss T, Shapiro BA, Poulikakos PI, Misteli T: Inhibition of vemurafenib-resistant melanoma by interference with pre-mRNA splicing. Nat Commun. 6:7103, 2015.

33.   Gupta K, Afonin KA, Viard M, Herrero V, Kasprzak W, Kagiampakis I, Kim T, Koyfman AY, Puri A, Stepler M, Sappe A, KewalRamani VN, Grinberg S, Linder C, Heldman E, Blumenthal R, Shapiro BA: Bolaamphiphiles as carriers for siRNA delivery: From chemical syntheses to practical applications. J. Control. Release. 213:142-151, 2015.

34.   Dao BN, Viard M, Martins AN, Kasprzak WK, Shapiro BA, Afonin KA: Triggering RNAi with multifunctional RNA nanoparticles and their delivery. DNA and RNA Nanotech. 2:1-12, 2015.

In Press/Submitted:

Books/Book Chapters:

1.   Shapiro BA and Kasprzak W: STRUCTURELAB: A heterogeneous computer system for the analysis of RNA structures. In Clarisse O (Ed.): Association of Lisp Users Meeting and Workshop Proceedings. Cambridge, Association of Lisp Users, 1995, pp. 1-19.

2.   Shapiro BA, Kasprzak W, Wu JC, and Currey K: RNA structure analysis: A multifaceted approach. In Wang J, Shapiro BA, and Shasha D (Eds.): Pattern Discovery in Biomolecular Data. New York, Oxford University Press, 1999, pp. 183-215.

3.   Shapiro BA, Bengali D, Kasprzak W, and Wu JC: Exploring RNA intermediate conformations with the massively parallel genetic algorithm. In Wang JTL, Wu CH, and Wang P (Eds.): Computational Biology and Genome Informatics. World Scientific, 2003, pp. 1-33.

4.   Shapiro BA, Bindewald E, Kasprzak W, and Yingling YG: Protocols for the *In silico* design of RNA nanostructures. In Gazit E and Nussinov R (Eds.): Protocols in Nanostructure Design. Totowa, New Jersey, Humana Press Inc., 2008, pp. 93-115.

5.   Severcan I, Geary C, Jaeger L, Bindewald E, Kasprzak W, and Shapiro BA: Computational and experimental RNA nanoparticle design. In Alteroutz G, Ramoni M, and Benson R (Eds.): Automation in Genomics and Proteomics: An Engineering Case-Based Approach. Wiley Publishing, 2009, pp. 193-220.

6. Kasprzak WK and Shapiro BA: Computational Prediction and Modeling Aid in the Discovery of a Conformational Switch Controlling Replication and Translation in a Plus-Strand Virus. In Leontis N and Westhof E (Eds.): <u>RNA 3D Structure Analysis and Prediction, Nucleic Acids and Molecular Biology</u>. New York, Springer, pp. 119-142, 2012.

7. Grabow WW, Afonin KA, Zakrevsky P, Walker FM, Calkins ER, Geary C, Kasprzak W, Bindewald E, Shapiro BA, and Jaeger L: RNA nanotechnology in Nanomedicine. In Sebastian M, Ninan N, and Haghi AK (Eds.): <u>Nanomedicine and Drug Delivery</u>, Apple Academic Press, New Jersey, 2012, pp. 208-220.

8. Kasprzak W and Shapiro BA: Role of dynamics in RNA nanostructure design. In Guo P and Haque F (Eds.): <u>RNA Nanotechnology and Therapeutics</u>, CRC Press, Boca Raton, FL, 2013, pp. 139-157.

9. Kasprzak W and Shapiro BA: MPGAfold in Dengue Secondary Structure Prediction. In Padmanabhan R and Vasudevan S (Eds.): <u>Dengue: Methods and Protocols.</u> New York, Humana Press (Springer), 2014, pp. 199-224.